SECTION VII of RFP

SCOPE OF WORK*

To meet the requirements and to fulfill the terms of the contract, the contractor shall complete the following eight tasks. These tasks outline a general approach for meeting the requirements; however, alternative approaches for some or all of the tasks may be proposed if they meet or exceed the requirements and this is adequately demonstrated in the proposed work plan. The Board, in agreement with the contractor, may modify the work plans based on new information gathered during the contract term.

PHASE I: Inventory and assess the environmental performance of all MSW landfills that have accepted waste since October 9, 1993, looking at air, groundwater, surface water, and gas impacts. ***(This includes any Class II that has received MSW now or in the past and accepted any waste since October 9, 1993. The approximate number of Class II landfills that would be included in the study is 12 landfills.)*** Approximately 240 MSW landfills have accepted waste since October 9, 1993 ***(This includes about 180 active MSW landfills and 60 MSW landfills that received waste since October 9, 1993, but have since stopped accepting waste.)*** and would fall under the Phase I portion of the study. (NOTE: October 9, 1993 is chosen as the cutoff date since that is the effective date for Subtitle D, Part 258, which created the first comprehensive federal standards for MSW landfills, a significant change in the regulation of MSW landfills.)

Task 1: Develop a checklist of pertinent environmental regulatory requirements

Develop a checklist of pertinent environmental regulatory requirements, listing each requirement, who enforces, and the media affected.

- Include all regulatory levels: federal, state, and local.
- At the local level, include pertinent codes and ordinances, and consider site specific conditions, such as CEQA and local land use conditions, when relevant to understanding MSW landfill environmental performance. ***The level of local review intended for Task 1 would be the standard codes and ordinances, such as those related to nuisance, as opposed to every single ordinance. If more detail on specific ordinances is needed, this can be provided at the Phase II portion of the study where the number of landfills will be much lower, thereby reducing the number of local regulations that will require review.***
- List any thresholds required by regulation.
- Also, include each regulator's monitoring/inspection procedures to help later with the assessment.

Deliverable: Checklist in both hard and electronic copies using a computer software format acceptable to Board staff. ***The data should be collected using a relational database to facilitate use of the data for later analysis. The CIWMB prefers Microsoft Access. PLEASE NOTE, at the beginning of the contract, the contractor will need to meet with the CIWMB's Information Management Branch to review and discuss various technical standards and database approaches. All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

Task 2: Develop landfill data of existing facilities

Inventory existing facilities for the following types of information, including, but not limited to:

- Added in italics where appropriate clarifications provided in Addendum 2.

- Age of landfill (e.g., waste disposal history);
- Waste types accepted (e.g., MSW, construction demolition, contaminated soils, sludges, ash, asbestos, etc.), their waste classification (e.g., nonhazardous, designated, or hazardous), and their characteristics (e.g., residential, commercial, industrial solid waste);
- Size of facility (e.g., total permitted and actual footprint, tons per day, annual tons, and annual volume), include remaining capacity (i.e., actual and planned, cubic yards and years remaining);
- Expansion history (e.g., vertical, horizontal over lined or unlined cells);
- Setting (e.g., geographic, hydrogeologic, geologic, and climatic; rural, urban, or suburban);
- Presence of sensitive receptors within proximity of landfill (e.g., human, endangered species, parks, wetlands);
- Unique attributes, such as trickling in waste (i.e., continue to receive small quantities of waste to avoid initiating closure activities);
- Status of permits;
- Type of owner/operator (e.g., public, private);
- Details of environmental protection systems (e.g., liner system; cover, including use and types of alternative daily cover; and gas control system);
- Inventory of available types of performance data (e.g., water quality monitoring data, including if there has been a release, if it has exceeded water quality objectives, if the release exceeds hazardous levels, the extent it is affecting surface or groundwater, and status of any corrective action that has been initiated) and the timeframe for which data are available; and
- Compliance record (e.g., groundwater monitoring, surface water monitoring; state, federal, and local air regulation requirements for stationary sources; status with Subtitle D hazardous waste exclusion requirement; financial assurances; closure/postclosure).

Obtain data from the Board, SWRCB, RWQCB, CARB, Air Districts, LEA, local environmental regulatory sources, landfill operator sources, and other sources, including environmental planning and engineering documentation, permits, monitoring records, closure/postclosure maintenance plans, financial assurance documentation, and enforcement action, USEPA databases, studies (e.g., Department of Toxic Substances Control Regulatory Structure Update study on solid waste landfill leachate). Provide the data source for each datum entry. ***Each data source needs to be listed. Actual copies of source documentation do <u>not</u> need to be submitted to the CIWMB.***

The CIWMB maintains the Solid Waste Information System (SWIS), which consists of data on landfills that fall under the CIWMB's jurisdiction, including: site location, owner/operator, enforcement agency, specifications (size, acreage, capacity information, and some waste types), site inspections, enforcement actions, permit applications, operational status, and alternative daily cover. SWIS does not contain data that fall under the jurisdiction of the SWRCB or the CARB. The completeness of the data varies depending on the category. For example, the inventory of active solid waste landfills has a high level of completeness. In other categories, the level may be lower. The database will be accessible to the contractor. However, the database should be considered a starting point. The contractor is still expected to review the records of regulators and operators in the collection of data for the study.

If gaps in data are identified and cannot be answered by viewing existing records of operators and regulators, then this should be noted in the study and no other ancillary services are required. Field inspections are unnecessary; the information should be obtained from the files of regulators and MSW landfill operators.

The CIWMB will be sending out letters advising LEAs, RWQCBs, air districts, and landfill owners/operators of the pending study and the need for the contractor to be provided access to records. A CIWMB contact name and phone number will be provided at the same time to answer any questions about the landfill study and the need for access. However, the responsibility to collect the necessary information falls

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on the contractor. The CIWMB has identified as one of the selection criteria within the RFP (under Section V. Evaluation and Selection, B. Selection Process) that the contractor demonstrate how he/she will successfully interact with landfill owners, operators, and regulators in the collection of accurate information.

Deliverable: Data collected above on landfills in both hard and electronic copies using a computer software format acceptable to Board staff. ***The data should be collected using a relational database to facilitate use of the data for later analysis. The CIWMB prefers Microsoft Access. The information being collected under Tasks 2 and 4 is already considered public information, and hence, will be available to the public. All records required by regulators are considered public information. Allowing access to all of the collected data specific to individual landfills allow the CIWMB to verify the information presented by the contractor as well as corroboration by landfill owners/operators, regulators, and the public. All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

Task 3: Perform a screening analysis of the landfills and report on results

Perform a screening analysis of the landfills compiled in the data under Task 2 as follows:

- Develop criteria for evaluating environmental landfill performance as approved by Board staff.

- Categorize the MSW landfills with respect to age, waste types accepted and characteristics, size, expansion history, setting, presence of sensitive receptors within proximity of landfill, unique attributes, status of permits, type of owner, environmental protection systems, available types of performance data, compliance record, and any other pertinent categories.

- Perform an analysis of the categorization results, summarizing by category, not by specific landfills, the current state of practice and compliance status of MSW landfills, including an evaluation of any commonality of factors (e.g., environmental protection systems), to the environmental performance of MSW landfills.

Prepare a report presenting the landfill data collected under Task 2, the results of the analysis, and recommendations for 40+ MSW landfills that should be included in the Phase II assessment. ***The information may be presented both site specific and aggregated. The purpose for aggregating the information is to facilitate analysis and not to protect a specific data source.*** The report should include a separate section that provides a brief overview of Class II landfills that do not receive MSW. The purpose of this section is to advise the reader of the Phase I Report of another set of landfills that will not be addressed by the proposed contracted study.

Deliverable: Phase I Report in both hard and electronic copies using a computer software format acceptable to Board staff. ***All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

PHASE II: Assess the effectiveness of current state regulatory requirements for MSW landfills, focusing equally on short-term implications (i.e., immediate impacts from current operational activities) and long-term implications (i.e., beyond immediate impacts up to 30 years, and beyond 30 years where necessary to gain information on longer-term closure impacts). Evaluate the potential for improvements to the current standards, looking at selected states' and countries' MSW landfill regulations, and new and emerging landfill technologies. Evaluate potential improvements to current standards

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through incentives to owners; additional training for regulators, operators, engineers, and contractors; more stringent interpretation of current regulations and/or promulgation of new regulations.

Task 4: Collect detailed data for 40+ landfills and selected pre-1993 landfills

Collect detailed data for 40+ MSW landfills selected from Phase I, as approved by Board staff, and an additional number of MSW landfills ***(between 5 to 10 landfills)***, as approved by Board staff, that closed prior to 1993. Selected landfills should represent the range of landfill ages, sizes, settings, waste types accepted and characteristics, expansion histories, types of owners, designs required prior to and since 1993; the completeness of the data record for the landfills; and any other pertinent factors. Special attention should be paid to landfills with unique attributes, such as compliance problems, horizontal and vertical expansions over lined and unlined cells, use of alternative daily cover, trickle in waste, siting close to sensitive receptors, etc.

[NOTE: The inclusion of MSW landfills that closed prior to 1993 allows the assessment of landfill performance to be more complete by including landfills that have been closed longer than 7 years, providing a longer closure period for environmental performance review. Environmental impacts that develop over a range of closure periods can be identified and assessed for different landfill categories (e.g., climatic setting). To facilitate the contractor's collection of data for these pre-1993 landfills, Board staff will approve the selection of the pre-1993 landfills prior to the initiation of Task 2, allowing the contractor to collect data on these sites at the same time as the landfills since 1993.]

In addition to the data already collected under Phase I, the following data should be collected for each landfill, <u>including, but not limited to</u>:

- Engineering design;
- Construction history and records;
- Operational history and records (including waste types accepted, annual tonnage, placement locations within landfill; daily, intermediate, and final cover activities);
- Construction and operating costs for each of the environmental protection systems in place (e.g., liner, leachate collection system, gas collection system, and cover)
- Water quality monitoring, gas monitoring, and air monitoring records;
- LEA inspection reports; and
- Compliance history, including status of enforcement actions. (NOTE: For landfills that accepted waste before 1993, need to consider the regulations applicable at the time.)

Survey landfill owners and operators, as well as enforcers regarding problems associated with achieving compliance. The public should also be interviewed where there has been a history of public involvement at the landfill. ***The intent is to interview no more than three key individuals or representatives of organizations that have been involved with a specific landfill. There is no need to hold public meetings or multiple meetings.***

If gaps in data are identified and cannot be answered by viewing existing records of operators and regulators, then this should be noted in the study and no other ancillary services are required. Field inspections are unnecessary; the information should be obtained from the files of regulators and MSW landfill operators.

Deliverable: Data collected above on landfills in both hard and electronic copies using a computer software format acceptable to Board staff. ***The data should be collected using a relational database to facilitate use of the data for later analysis. The CIWMB prefers Microsoft Access. The information being collected under Tasks 2 and 4 is already considered public information, and hence, will be available to the public. All records required by regulators are considered public information. Allowing access to all of the collected data***

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specific to individual landfills allow the CIWMB to verify the information presented by the contractor as well as corroboration by landfill owners/operators, regulators, and the public. All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.

Task 5: Perform analysis of the 40+ landfills and selected pre-1993 landfills and report on results

Perform analysis of the historical, present, and potential future environmental protection performance of the 40+ landfills and selected pre-1993 landfills under Task 4.

- Evaluate and consider analytical and numerical models (e.g., liner leakage models, gas emission models) where appropriate and acceptable to Board staff for developing insights into the effectiveness of the regulatory requirements as applied at the studied landfills.

- Consider environmental protection performance factors, including, but not limited to: groundwater impacts at the point of compliance, if there has been a release, if it has exceeded water quality objectives, if the release exceeds hazardous levels, and the extent it is affecting surface or groundwater, gas impacts in structures and at the property boundary, subsurface gas migration potential, and atmospheric emissions.

- Include the compliance record, potential short and long-term environmental impacts, short and long-term maintenance issues, impacts from closure, and any other pertinent factors.

Prepare a report presenting the landfill data under Task 4, the results of the analysis, and conclusions that can be drawn. ***The information may be presented both site specific and aggregated. The purpose for aggregating the information is to facilitate analysis and not to protect a specific data source. However, for purposes of analysis, aggregation of the information is preferred.*** The report should include a separate section that provides a brief overview of Class II landfills that do not receive MSW. The purpose of this section is to advise the reader of the Phase II Report of another set of landfills that will not be addressed by the proposed contracted study.

Deliverable: Phase II Report in both hard and electronic copies using a computer software format acceptable to Board staff. ***All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

Task 6: Evaluate MSW landfill regulations from selected states and countries

Evaluate MSW landfill regulations from selected states and countries acceptable to Board staff, and compare and contrast with California's regulations. ***Approximately 3 states and 2 countries should be evaluated. PLEASE NOTE, the expectation is for the contractor, at a later date, to propose the 3 states and 2 countries for study; CIWMB staff will review and approve a final list.***

- Examine the media impacts of air, water, and gas.

- Include the following factors as part of the evaluation: age and size of landfill, waste types accepted and characteristics, expansion history, setting, presence of sensitive receptors within proximity of landfill, unique attributes, type of owner, details of environmental protection systems, inventory of available types of performance data, compliance record, and any other pertinent factors. ***The purpose of including a description of the landfills is to provide context to the regulation information being gathered. For example, the regulations may apply to a broader spectrum of***

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landfills and not be limited to MSW landfills. This also facilitates the identification of regulatory elements that could be applied in California by providing points (landfill features) for comparison between the selected state and California.

- Identify those elements that if applied in California could possibly improve and/or enhance California's multimedia regulation of MSW landfills
- To the extent possible, compare the incremental cost and environmental protection benefit of the selected states' and countries' regulations to California's current state of practice.

Deliverable: Information collected from selected states and countries, and the evaluation in both hard and electronic copies using a computer software format acceptable to Board staff. ***All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

Task 7: Identify emerging technologies

Identify emerging technologies (e.g., bioreactors, alternative covers, landfill gas recovery) as well as new approaches (e.g., operator certification programs and environmental management system, such as the International Organization for Standardization 14000 Standards) that if applied in California could possibly improve and/or enhance the operation of California's MSW landfills. ***The study is limited to technologies and regulatory approaches directly related to the disposal of waste.***

- Characterize where these technologies are being applied, including the following factors: age and size of landfill, waste types accepted and characteristics, expansion history, setting, presence of sensitive receptors within proximity of landfill, unique attributes, type of owner, details of environmental protection systems, inventory of available types of performance data, compliance record, and any other pertinent factors.
- Describe the features, appropriateness to conditions in California, advantages, limitations, any uncertainties of the technology (e.g., completeness of decomposition for bioreactors), and costs associated with these technologies, focusing equally on short-term and long-term.
- To the extent possible, compare the incremental cost and environmental protection benefit of identified emerging technologies to California's current state of practice.

Deliverable: Information collected and findings in both hard and electronic copies using a computer software format acceptable to Board staff. ***All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB.***

Task 8: Prepare final project report

Prepare a final project report that presents comprehensive findings on the regulation and compliance of MSW landfills in California and recommends possible improvements or enhancements to California's multimedia regulation of MSW landfills that will result in greater environmental performance. This should include, at a minimum, the following:

- Describe the study purpose, goals, methodology, and results.
- Summarize the results and conclusions from the Phase I and II Reports.
- Describe the findings from the evaluations of selected states' and countries' regulations, and new and emerging technologies.

- Added in italics where appropriate clarifications provided in Addendum 2.

- Discuss the level of environmental protection being provided by the range of regulatory requirements and current practices for MSW landfills for both the short-term and the long-term. This includes:

    1. Identifying regulatory changes that have occurred since 1993.

    2. Quantifying, to the extent possible, the incremental improvement in environmental protection due to implementation of new regulatory requirements effective in California since 1993.

    3. Quantifying, to the extent possible, the incremental benefits associated with the more stringent regulations of selected states and countries in comparison to California's regulatory framework.

- Identify indicators that could be used to track ongoing environmental performance for possible inclusion in a single statewide database system.

- Discuss any commonality of factors to the environmental performance of MSW landfills.

- Discuss incremental costs and environmental protection benefits associated with more protective designs, operational practices, and/or monitoring systems, and new and emerging technologies.

- Discuss whether a need exists to change and improve MSW landfill practices for the short-term and the long-term.

    - ✓ For the long-term, address, to the extent possible, the following issues: the length of time landfills pose a significant threat to the environment as currently regulated; the adequacy of current regulatory requirements to address long-term impacts; the identity of regulatory and technological approaches that could better address long-term impacts; and the appropriate postclosure maintenance period for financial assurances and the threat to the environment.

- Discuss potential mechanisms for achieving this objective, including incentivizing owners to use more protective designs or new/better technology, providing additional training to MSW landfill regulators, operators, etc., clarifying existing regulations, and/or promulgating new regulations.

- Add a separate section that provides a brief overview of Class II landfills that do not receive MSW. The purpose of this section is to advise the reader of the Final Report of another set of landfills that will not be addressed by the proposed contracted study. The brief overview should include basic information, such as the number of landfills broken down by type of owner; general regulatory requirements at the federal, state, and local levels; waste types accepted; fee payment to state and local regulators; size of landfills; total remaining capacity broken down by state location (north/south); and setting (geographic, climatic; rural, urban, or suburban). ***This can be provided as a summary of the information and is not required for each landfill.***

Deliverable: Final Report in both hard and electronic copies using a computer software format acceptable to Board staff. ***All deliverables will be reviewed for acceptability by a team representing the SWRCB, CARB, and CIWMB. Any actions taken by the CIWMB in response to findings from the study will take place at a CIWMB meeting, which is open to the public for review and comment.***

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